

**BY ORDER OF THE COMMANDER  
354TH FIGHTER WING (PACAF)**

**354TH FIGHTER WING INSTRUCTION  
21-125**



**7 MARCH 2012**

***Maintenance***

***HYDRAZINE (H-70) FAMILIARIZATION  
TRAINING, LEAK DETECTION, SPILLS,  
AND RECOVERY OF AIRCRAFT WITH  
FIRED EMERGENCY POWER UNITS***

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction establishes policy and procedures to support H-70 familiarization training, leak detection, spills, and recovery of F-16 aircraft after operation of the Emergency Power Unit (EPU). It implements AFPD21-1, Air and Space Maintenance and applies to all personnel and units assigned, attached, or tenant to the 354th Fighter Wing. In situations where the Hydrazine Response Team (HRT) leader determines this instruction does not adequately cover procedures for the particular situation, authority is granted to add to or deviate from the procedures when safety of personnel or damage to equipment is involved. This publication does not apply to the Air National Guard or US Air Force Reserve. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, Recommendation for Change of Publication; route AF IMT 847s from the field through the appropriate functional's chain of command.

***SUMMARY OF CHANGES***

The Maintenance Operation Center (MOC), 354 OG Supervisor of Flying, Fire Department, MXG/CC, Explosive Ordnance Disposal (EOD), Bioenvironmental Engineering (BIO), Security Police, Wing Safety, HRT and AMU Superintendent responsibilities were updated. This revision is a complete rewrite and supersedes all previously published revisions.

**1. References:** LCL-354FW-20-4, AFI91-301, AFOSH STD 48-22, 48-137, 48-155, 91-31, 91-68, 91-501, AFMAN91-201, TO's 00-25-172, 1F-16CG-2-49GS-00-1, 1F-16C-2-49JG-00-1, 1F-16C-2-49JG-00-2, 1F-16C-2-49JG-00-3, and 6J14-11-2.

**2. Definition of H-70.** H-70 is a clear, oily liquid having an ammonia-like odor that is corrosive, combustible and highly toxic. A major spill is considered 1 liter or more, minor spill is considered 1 liter or less.

### **WARNING**

**Non-essential personnel shall leave the immediate area to avoid breathing H-70 vapors. Failure to do so may result in personal injury. Personnel will exercise care to ensure that H-70 does not come in contact with skin or eyes. All EPU firings and suspected H-70 leaks will be treated as definite leaks until the HRT team determines otherwise.**

**3. H-70 Training.** All aircraft maintenance and aircraft fuel systems personnel will receive familiarization training in the hazards of H-70. All unit commanders will ensure that personnel with duties in the proximity of F-16 aircraft or H-70 also receive training.

3.1. The 354 MXG/MXOT will provide initial H-70 familiarization training for all personnel, including fire protection personnel.

3.2. The 354 MXS/MXMCF, 354 CES/CED (EOD), 354 MDOS/SGOAB, and 354 CES/CEF will provide in-shop specialized training as required.

### **4. Designated Areas.**

4.1. Recovering aircraft with a fired emergency power unit (EPU): If the aircraft is landing on runway 32, it will be parked on the primary hot cargo pad, the secondary location will be the arming spot close to the runway with the aircraft pointing into the wind on taxiway "A". If the aircraft is landing on runway 14, it will be parked on taxiway "E" or its alternate, the hot brake/arming area. After HRT has positively identified that there is no evidence of H-70 leakage, the aircraft will be directed to taxi or be towed to the nearest routine EPU maintenance area.

4.2. EPU Maintenance: The F-16 H-70 maintenance areas are located on Alpha row spot 1, bay 8, building 1344 fuel shop, Trim pad (Fox hardstand), or Charlie row. Spot 1 will be used as de-arm and/or emergency H-70 bottle depressurization area only. The aircraft will then be towed to the primary maintenance location building 1344. In the event that 1344 is unavailable the alternates; bay 8, Trim pad (Fox Hardstand), or Charlie row will be utilized in that order. Aircraft must be located away from mass parking areas and aircraft loaded with live munitions. EPU maintenance will be restricted to concrete pads in alternate locations. These areas will be utilized to perform maintenance including: H-70 tank emergency depressurization and replacement, purge and coupling disconnects, and mono-propellant checks. Bays 2 thru 12 can be utilized for EPU mono checks H-70 fuel line hook up, and nitrogen line hook up.

4.3. Authorized Storage Area: Building 1344 is the only facility on Eielson AFB authorized for the storage of H-70.

**5. Responsibilities.** Any individual who discovers leakage of a clear liquid coming from the aircraft or detects the presence of an ammonia odor will immediately evacuate the area, notify MOC through the most expeditious means possible, and seek immediate medical attention. Personnel will remain a minimum of 100 ft upwind and 300 ft downwind from the suspected leak and direct response personnel upon arrival. The Incident Commander will modify the cordon as required. If no leak or minor leak is noted then the cordon will be reduced or rescinded.

5.1. The 354 MXG/MXOOM (MOC) will initiate the Emergency Action Checklist:

5.1.1. Notify COMMAND POST (7-1500)

5.1.2. Notify Fire Department (7-4156, 4266, 5146)

5.1.3. Notify Fuel Shop (7-1944 , 2723)

5.1.4. Ensure all non-essential personnel are evacuated from the area (100 ft minimum upwind to 300 ft downwind) or as directed by Incident Commander/Emergency Operations Center Director

5.1.5. Notify QA (7-0150, 2764, 3701, 1425)

5.1.6. Notify SECURITY FORCES (7-5130, 3133)

5.1.7. Notify Wing Safety (7-4260, 1025)

5.1.8. Notify all radios on all maintenance nets

5.1.9. Once spill/leak is confirmed, maintain radio contact with fuel shop until spill is contained and cleaned up.

5.2. The Supervisor of Flying (SOF) when notified by the Air Crew will:

5.2.1. Initiate the SOF Quick Reaction Checklist.

5.3. The 354 CES/CEF (Fire Department) will:

5.3.1. Act as the Incident Commander.

5.3.2. Safe the F-16 aircraft by:

5.3.2.1. Chalking the left main tire.

5.3.2.2. Pinning the main gear.

5.3.2.3. Pinning the gun.

5.3.2.4. Pinning the EPU only after the pilot has turned it off and placed all weapons switches to the off/safe/norm position.

5.3.2.5. Conduct initial H-70 detection procedures by checking the H-70 detector pellet and EPU cavity drains for leakage. Any leaks noted should be considered H-70 and reported to the HRT supervisor.

5.3.3. Provide a water source for dilution/neutralization of H-70 and act as an emergency shower/eyewash for personnel decontamination of HRT members.

5.3.4. Maintain contact with HRT and provide condition updates to the command post as required.

5.3.5. Maintain portable oxygen systems to egress pilot from cockpit. In the event of an EPU activation be prepared to egress the pilot using the portable oxygen unit.

5.3.6. Have the Incident Commander determine wind direction, coordinate with HRT and security police to establish position of entry control point will appoint an entry control point guard.

5.3.7. If the pilot is disabled in the aircraft, extract the pilot with a portable oxygen bottle and treat the incident as a H-70 leak until confirmed otherwise by HRT.

5.4. The 354 CES/CED (Explosive Ordnance Disposal) will:

5.4.1. If ordnance is on board the aircraft and a leak is detected, provide a team qualified on the self-contained breathing apparatus and level A or B first responder suit to render safe any ordnance at the direction of the Incident Commander.

5.5. The 354 MXS/CC will:

5.5.1. Ensure HRT performs inspections and conducts containment, dilution, and neutralization actions as required in applicable directives.

5.5.2. Ensure the HRT members are provided with the proper personal protective equipment and chemicals/materials for inspection, identification, and neutralization of H-70.

5.6. The 354 MXG/CC designated representative will:

5.6.1. Ensure local checklist for H-70 leak/spill clean-up meets TO 1F-16C-2-49GS-00-1 procedures and is developed in coordination with base Bioenvironmental Engineer (BEE).

5.7. The 354 MDOS/SGOAB (BIO) will:

5.7.1. Respond when notified by the Incident Commander of an actual H-70 leak.

5.7.2. Provide technical guidance and advice to the Incident Commander on issues related to health consequences from exposure and testing/disposal of neutralized waste.

5.7.3. Provide assistance in the selection of appropriate personal protective equipment.

5.7.4. Upon completion of containment and neutralization, test the aircraft or spill areas to detect any residual presence of H-70 vapors and liquids.

5.7.5. Provide technical assistance in the neutralization and disposal of neutralized H-70.

5.7.6. Ensure HRT members are included in the medical surveillance program.

5.8. The 354 SFS/SPO (Security Forces) will:

5.8.1. If first on the scene, evacuate the area to a distance of a 300-foot radius. If spills are inside a hangar, evacuate hangar and any adjoining offices.

5.8.2. Allow only those personnel into the area that are approved by the Incident Commander.

5.8.3. As directed by the Incident Commander, establish a cordon at least 100 feet upwind, and initially 300 feet downwind of the suspected leak/spill area.

5.9. The 354 FW/SE (Wing Safety) will:

5.9.1. Monitor operations from outside the designated perimeter until the scene is deemed safe for investigation.

5.9.2. Assist commanders in investigating and reporting all incidents or mishaps involving H-70 IAW AFI91-204.

5.10. The 354 MXS/MXMCF HRT will:

5.10.1. Dispatch HRT to the site of the suspected leak or EPU firing.

### **WARNING**

**Maximum protective safety gear level A or modified level B is required for investigating a suspected or confirmed H-70 leak IAW LCL-354MXG-20-4.**

5.10.2. Once the Incident Commander has ensured aircraft is safe, HRT will investigate suspected leak by the most appropriate means.

## **6. Initial Actions:**

6.1. Ensure aircraft has been safed by the Fire Department.

6.1.1. Once cleared by the Incident Commander, HRT enters the area and visually/mechanically checks all areas for traces of H-70 (visual, litmus paper, Draeger tester). HRT team supervisor will inform the Incident Commander of the test results.

6.2. Fired EPU with no H-70 leak detected.

6.2.1. When notified by the HRT supervisor the Incident Commander will announce over the crash net there is no H-70 leak and terminate the ground emergency.

6.2.2. The aircraft will remain running.

6.2.3. The AMU Superintendent will direct the pilot to taxi to the nearest H-70 servicing area (see section 4.1/4.2). The Fire Department and HRT will follow the aircraft to that location.

6.2.4. If the aircraft is unable to be taxied due to the nature of the emergency the Fire Department will instruct the pilot to shut down the aircraft and egress the pilot normally from the cockpit. Crash Recovery or qualified tow team will be required to tow the aircraft to the nearest H-70 servicing area.

6.2.5. Upon arrival, the Fire Department will:

6.2.5.1. Chalk the left main gear, HRT will recheck the aircraft for evidence of leakage.

6.2.5.2. If no leak is detected the aircraft will be shutdown normally by the AMU. After the pilot has cleared the area, HRT will perform the H-70 bottle emergency depressurization.

6.2.5.3. Once HRT declares all clear, the Fire Department can return to station.

6.3. Fired EPU with H-70 leak visually detected.

6.3.1. The pilot will shut down the engine when the Incident Commander is prepared to egress the pilot using a portable oxygen bottle.

6.3.2. Egress the pilot

6.3.3. Once shutdown, the Incident Commander will ensure EOD personnel safe all ordnance as required.

6.3.4. HRT will perform emergency depressurization the H-70 tank, contain any leaks, and perform cleanup/neutralization procedures as required.

6.3.5. Once spill has been contained and neutralized, BIO will test aircraft and surrounding area for residual presence of H-70 to verify neutralization has been accomplished.

**7. Deployment Requirements.**

7.1. A three-member team with an approved H-70 detection unit, spill kit and personnel protective equipment will accompany all F-16 deployments consisting of four or more aircraft, lasting more than a week, if the deployed location has no H-70 support capability.

7.2. Immediately upon arrival at a non-F-16 base, the senior HRT member will coordinate with the host base representative for a briefing on the dangers of H-70 and procedures for spills and leak responses.

7.3. The Fuel System Repair Section will develop and maintain at least one kit for H-70 leaks in coordination with base BEE. The H-70 kit will be mobile and readily available for dispatch.

**8. EPU Mono Tester Maintenance.**

8.1. To reduce the possibility of personnel becoming exposed to H-70 vapors, the following precautions must be adhered to:

8.1.1. The EPU Mono test set must be tested for H-70 vapors after every use. If H-70 is present, the equipment must be purged by qualified 2A6X4 personnel.

8.1.2. Calibration of the EPU test set will not be accomplished until the tester has been purged by qualified personnel.

**WARNING**

**Failure to purge EPU test set properly may  
result in injury of personnel or damage to  
equipment.**

8.1.3. Purged testers will have an AFTO Form 244 and 350 tag that will be annotated to reflect the date used and date purged.

**9. Procedures in the event of personnel being exposed to H-70.**

9.1. Exposed personnel will be isolated in an area upwind and away from the contaminated area and will undergo medical evaluation.

9.2. Personnel who are exposed to H-70 on their skin or clothing will proceed to the nearest source of water.

9.2.1. Clothing: Immediately remove all clothing and flush affected skin area with water for a minimum of 15 minutes. Contaminated clothing will be neutralized by HRT team and disposal will be coordinated with BIO and the Civil Engineering Environmental Flight.

9.2.2. Eyes: Immediately flush with large amounts of water for a minimum of 15 minutes and transport personnel to hospital emergency room.

9.2.3. Inhalation: Seek medical evaluation from the medical response team and transport to hospital emergency room.

9.3. The HRT will properly neutralize and/or dispose of all contaminated clothing and equipment.

## **10. H-70 Servicing and Storage Facility.**

10.1. Location of operation: Building 1344 (588) .

10.2. Safety precautions:

10.2.1. The servicing and storage facility will be identified by the appropriate chemical agents, signs, and placards mounted to all four sides of the building and easily visible from all directions.

10.2.2. The three-person concept will be used during any H-70 servicing or handling operations.

10.2.3. Full protective clothing and respiratory protection (level A or modified level B) for each person present will be readily available any time the door is open.

10.3. Emergency procedures:

10.3.1. H-70 spill: In the event of a H-70 spill at bldg 1344, MOC will be notified and the area evacuated to a minimum distance of 100 feet to include buildings 1340 and 1346.

10.3.2. Fire: In the event of a fire at bldg 1344, the MOC will be notified and personnel evacuated upwind. The area will be cordoned off a minimum of 500 feet.

10.4. H-70 storage limits:

10.4.1. 225 gallons.

10.4.2. Ten full H-70 tanks.

10.5. Personnel limits while servicing H-70 tanks:

10.5.1. Maximum: Eight.

10.5.2. Minimum: Three.

## **11. Transportation of H-70 Fuel Tanks on Base.**

11.1. Safety procedures:

11.1.1. All tanks, whether empty or containing any amount of H-70, will be transported in a DOT approved shipping container only.

- 11.1.2. The two-person concept will be used during all phases of transport.
- 11.2. The fuel shop supervisor will inform MOC prior to and upon completion of transport of H-70 tanks to and from the storage facility.
- 11.3. HRT will ensure each transport vehicle will carry no more than three full H-70 tanks at any given time.
- 11.4. Emergency procedures: In the event a shipping container develops a leak in transit, the MOC will be immediately notified and personnel will evacuate to a minimum distance of 100 feet upwind and 300 feet downwind of the site.
- 11.5. MOC will:
  - 11.5.1. Maintain status of the transport operation, including advance knowledge of route to be used.
  - 11.5.2. Initiate emergency notification procedures if a spill or leak occurs during transportation.
- 11.6. Personnel limits:
  - 11.6.1. Maximum: One supervisor, four workers.
  - 11.6.2. Minimum: One supervisor, one worker.
- 11.7. Equipment requirements:
  - 11.7.1. Military vehicle.
  - 11.7.2. Fuel tank shipping/handling/storage container (DOT approved).
  - 11.7.3. Personal protective clothing (three sets):
    - 11.7.3.1. Boots.
    - 11.7.3.2. Apron and level A or modified B H-70 suit.
    - 11.7.3.3. Gloves.
    - 11.7.3.4. Face shield.
    - 11.7.3.5. Self-contained breathing apparatus.
  - 11.7.4. Maintenance net radio.
  - 11.7.5. DOT poison, corrosive material, and flammable liquid placards.

JAMES N. POST III  
Brigadier General, USAF  
Commander



**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

LCL-354MXG-20-4, "F-16 HYDRAZINE EMERGENCY PROCEDURES FOR INITIAL RESPONSE, LEAK CONTAINMENT, SPILL CLEANUP & NEUTRALIZATION", 30 AUGUST 2011

AFI91-301 "AIR FORCE OCCUPATIONAL AND ENVIRONMENTAL SAFETY, FIRE PROTECTION, AND HEALTH (AFOSH) PROGRAM", 1 June 1996

AFOSH STD 48-22 "OCCUPATIONAL EXPOSURE TO HAZARDOUS CHEMICALS IN LABORATORIES", 1 March 1994

AFOSH STD 48-137 "RESPIRATORY PROTECTION PROGRAM", 10 February 2005

AFMAN 48-155 "OCCUPATIONAL AND ENVIRONMENTAL HEALTH AND EXPOSURE CONTROLS", 1 October 2008

AFOSH STD 91-68 "CHEMICAL SAFETY", 1 October 1997

AFOSH STD 91-501 "AIR FORCE CONSOLIDATED OCCUPATIONAL SAFETY STANDARDS", 7 July 2004

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TO 00-25-172 "GROUND SERVICING OF AIRCRAFT AND STATIC GROUNDING/BONDING (ATOS)", 19 JAN 2012

TO 1F-16CG-2-49GS-00-1 "GENERAL SYSTEM -- ORG MAINT -- EMERGENCY POWER SYSTEM (LOCKHEED MARTIN)", 1 SEP 2011

TO 1F-16C-2-49JG-00-1 "TECHNICAL MANUAL -- JOB GUIDE -- ORGANIZATIONAL MAINTENANCE EMERGENCY POWER SYSTEM USAF SERIES F-16C/D AIRCRAFT BLOCKS 25, 30, AND 32" 1 SEP 2011

TO 1F-16C-2-49JG-00-2 "TECHNICAL MANUAL -- JOB GUIDE -- ORGANIZATIONAL MAINTENANCE EMERGENCY POWER SYSTEM USAF SERIES F-16C/D AIRCRAFT BLOCKS 25, 30, AND 32" 1 SEP 2011

TO 1F-16C-2-49JG-00-3 "TECHNICAL MANUAL -- JOB GUIDE -- ORGANIZATIONAL MAINTENANCE EMERGENCY POWER SYSTEM USAF SERIES F-16C/D AIRCRAFT BLOCKS 25, 30, AND 32" 1 SEP 2011

TO 6J14-4-11-2 "MAINTENANCE INSTRUCTIONS -- INTERMEDIATE -- FUEL STORAGE TANK, PN 581680-3-1, 581680-4-1, 581680-5-1 (AIRESEARCH)" 25 OCT 2007

***Terms***

**Definition of H—70.** H-70 is a clear, oily liquid having an ammonia-like odor that is corrosive, combustible and highly toxic. A major spill is considered 1 liter or more, minor spill is considered 1 liter or less.